ABSTRACT OF THE DISCLOSURE

An electrostatically shielded radio frequency (ESRF) plasma apparatus includes a process chamber which encloses a plasma area and a resonator assembly which surrounds the plasma area and includes a coil. The ESRF plasma apparatus also includes a clamping plate which secures the resonator assembly to at least the process chamber. In this manner, the geometry of the resonator chamber can be altered while maintaining the plasma area in an evacuated state. Additionally, an electrostatic shield may be provided and the ESRF plasma apparatus may also be configured such that the electrostatic shield can be replaced while maintaining the plasma area in an evacuated state. Additionally, the resonator assembly may be constructed of sheet metal and may be assembled using standard flanges. Additionally, seals, which are used to seal the plasma area and the resonator assembly, are standard seals.